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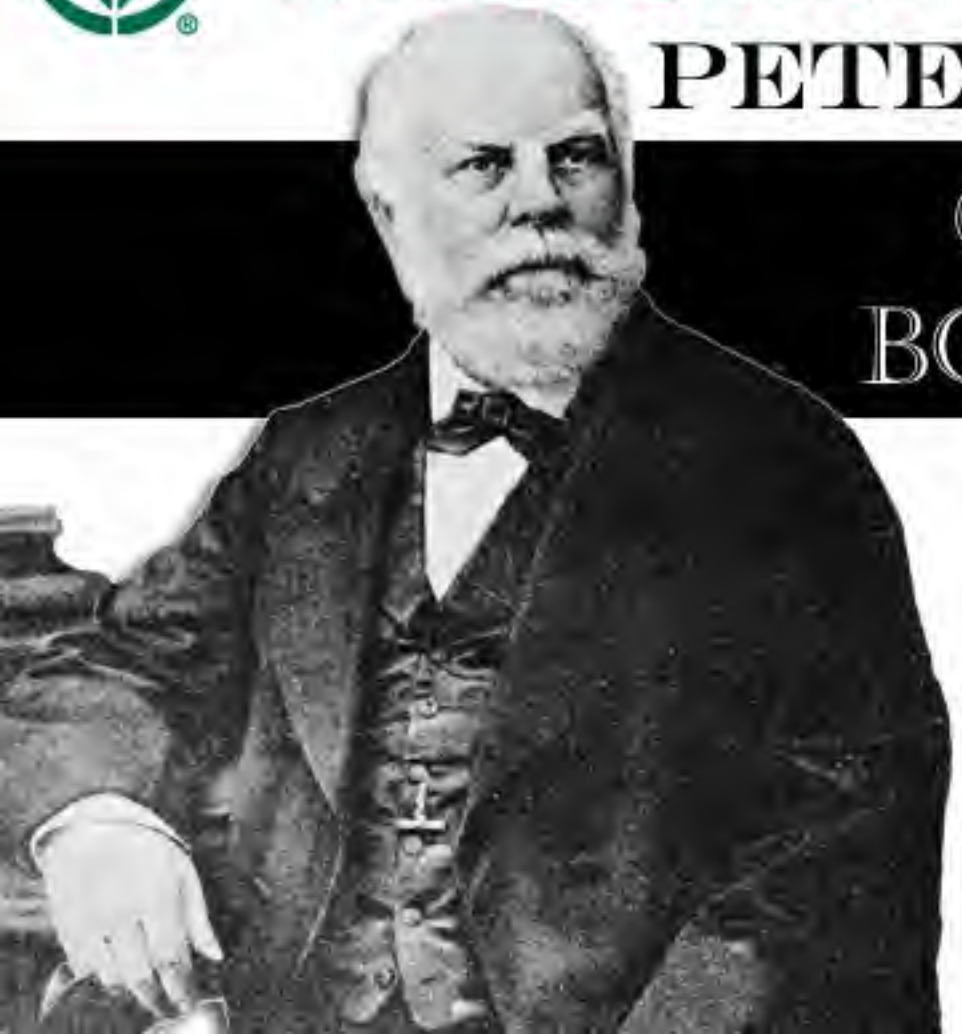
George Engelmann Botanical Notebooks



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1-27

Vagitacea

0 1 2 3 4 5 6 7 8 9 10
cm
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10012

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Sagittaria

Estherville, Dowa

Octob 5 1881

×10

nearly mature achen

×10

very young achen

pistil in flower

single female verticil — often even one of these lowest flowers male i pedicel in male & female flowers equal

×10

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10013

Leitch & Collies

CHROMOGRAPHS

South West Corner Fifth and Market Streets

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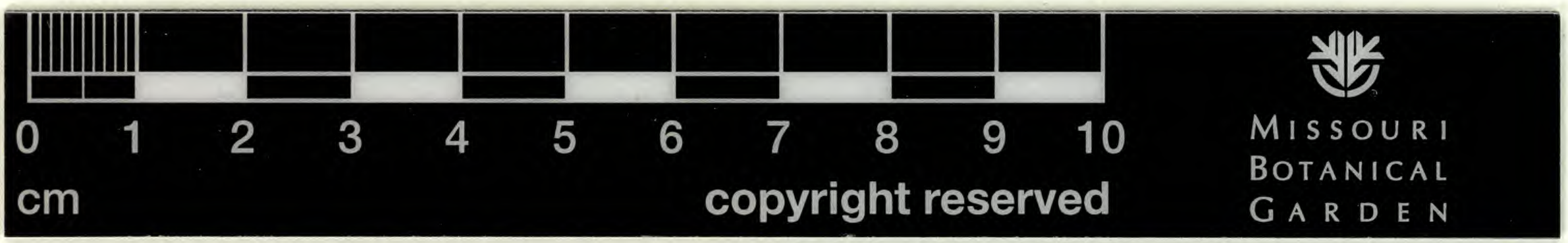

Oct 1821

x10

M.A. Curtis

Curtis

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cm
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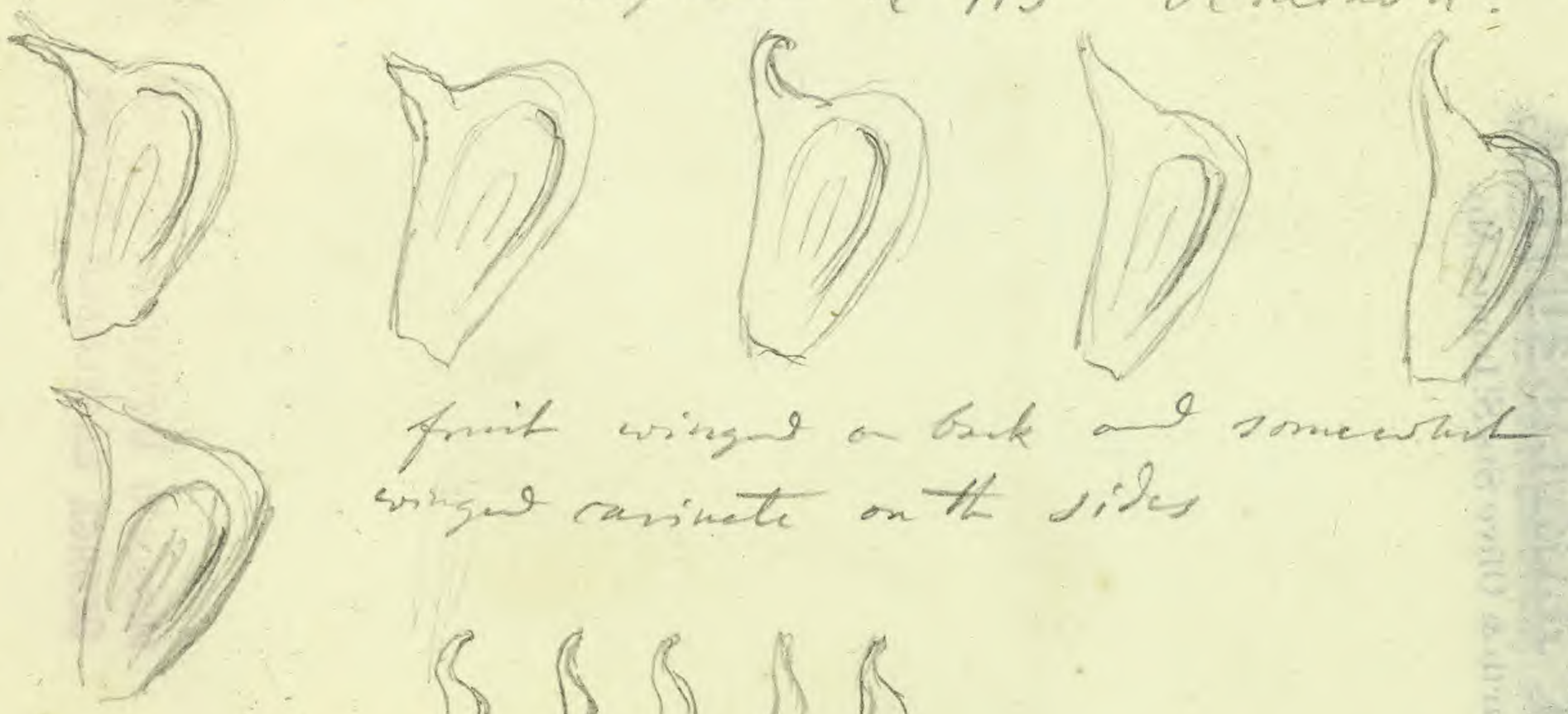
Sagittaria N 713 R. Lindh.



fruit winged a back and somewhat winged carinate on the sides

pistills

pedicelles femineae bracteatae subaequales dorsaliter decurvatis, but no other difference from S. graminea

0 1 2 3 4 5 6 7 8 9 10
cm
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- 10015

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D D D D

pistils

Sagittaria

Diendemeles 1847

July 1860

Pollen $\frac{4^{D}/_{4}}{412} = 0.011$ lin

$\frac{-5}{412} = 0.012$

10616

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1862...25.9 30.2 45.2 59.0 69.4 79.1 81.2 80.7 72.1 61.3 44.1 31.2

RELATIVE HUMIDITY.

	Jan.	Feb.	Mar.	Ap'l.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean of Year.
1861...	72.2	63.3	64.5	61.5	66.3	70.8	66.3	69.6	77.3	76.6	69.0	74.3	69.5
1862...	85.3	73.9	70.8	67.0	57.3	67.0	66.8	64.3	74.2	67.2	69.5	74.6	69.8

III. *Yearly mean of Positive Electricity of Temperature, and of Relative Humidity of the Atmosphere, at the hours of* 6, 9, 12, 3, 6 *and* 9, *from morning till night, based upon daily observations at these hours through the years* 1861 *and* 1862, *at St. Louis, Mo.*

ELECTRICITY.

	At 6 A.M.	At 9 A.M.	At 12 M.	At 3 P.M.	At 6 P.M.	At 9 P.M.
1861	8.6	10.0	9.2	7.9	8.7	6.9
1862	8.9	10.0	9.1	7.3	8.1	6.8

TEMPERATURE.

1861	48.9° F...	54.9	61.6	63.6	59.3	54.3
1862	48.9	55.0	60.9	62.3	58.0	53.6

RELATIVE HUMIDITY.

186	86.4	71.3	60.3	57.2	65.1	77.3
186	5.3	70.6	60.0	57.5	67.6	78.0

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Nov.....	14	19	21	12	45	19	54	18	W. & N.W.	0
Dec.....	11	17	21	5	34	45	13	38	S., S.E. & W.	4
	112	191	211	230	259	265	351	550	S.E.	50

10017

V. *Positive or Negative Electricity in the Observations of* '61 & '62.

	Positive Electricity.		Negative Electricity.		No Electricity, or 0.		Highest Positive Electricity.	
	1861.	1862.	1861.	1862.	1861.	1862.	1861.	1862.
Jan.....	179	179	3	5		2	40°	40°
Feb.....	162	166	6	2			34	33
March ...	168	179	15	8			30	48
April	157	157	12	22	1	1	33	52
May.....	171	180	17	5	1	3	25	32
June	162	143	5	2	8	20	16	21
July.....	183	153	3	8	1	24	14	11
August..	176	143	5	4	6	40	15	19
Sept.....	169	117	1	1	10	61	18	23
Oct.....	162	143	4	3	20	41	33	35
Nov.....	172	157	2	7	6	16	42	42
Dec.....	175	166	5	0	6	17	37	35
	2046	1883	78	67	59	225	42°	52°

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0 1 2 3 4 5 6 7 8 9 10 cm

V

S. crispata 1881

100184

young fruit

fruit ripe almost

1847

S. graminea ?

A. N. Carolina

C. N. Carolina

0 1 2 3 4 5 6 7 8 9 10
cm
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100188

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Sagittaria cristata Engl. Hb. C. E Faxon

Banks of the Merrimac, Lawrence Mass

= new Iowa plant Aug 5th 1879

only one female verticil & short pedunculed

exactly like the Iowa plant

Cornuti / heterophylla Pluegge

(= C. platanorum & C. pectinata

Coll Hohenacker, Helvetia 1857

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cm
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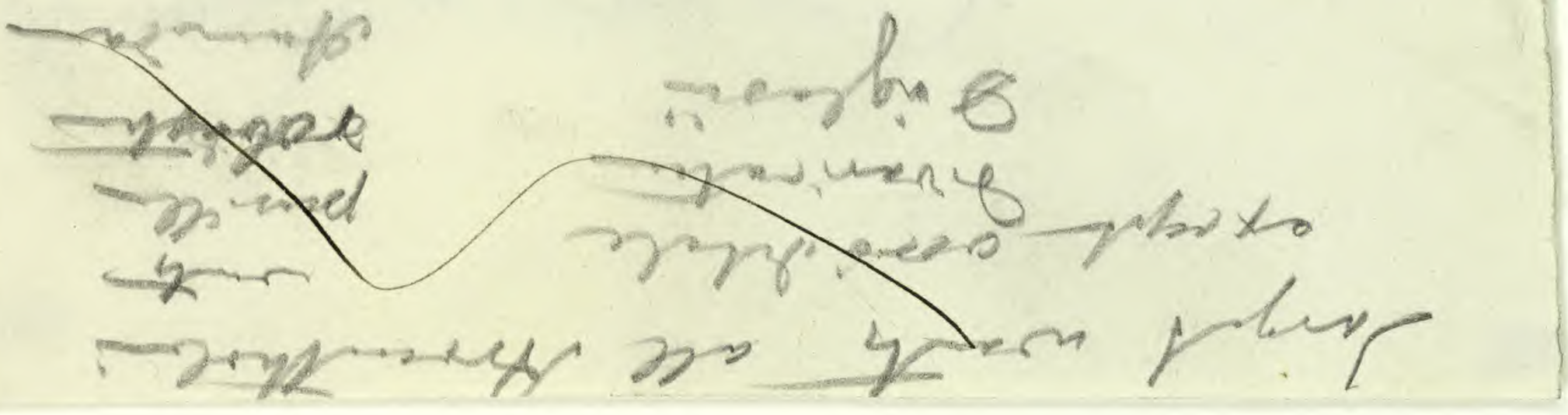

0 1 2 3 4 5 6 7 8 9 10
cm
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October	3	1	1	1	7	1 .....
November	2	3	.....	7	.....	7 .....
December	2	3	.....	.....	.....	6 .....
	50 + el.	36 + el.	23 — el.	28 — el.	15 no el.	34 no el.

Snowing was accompanied

	By Positive Electricity.		By Negative Electricity.		By no Electricity.	
	In 1861.	In 1862.	In 1861.	In 1862.	In 1861.	In 1862.
January.....	3	9	.....	2	.....	.....
February	12	8	.....	1	.....	.....
March	3	12	.....	.....	.....	.....
October.....	.....	1	.....	.....	.....	.....
November	.....	4	.....	.....	.....	.....
December	5	2	2	.....	.....	1 .....
	23 + el.	36 + el.	2 — el.	3 — el.	.....	1 no el.

REMARKS.

The monthly mean of atmospheric electricity in 1862 was not quite so regular as that in 1861. While in 1861 an un-

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December; the second with a [illegible] of March, April, May and October; and the third with the lowest electricity by the months of June, July, August and September.

10020

The aggregate monthly mean of

The first group in 1861 is	52.9	—in 1862,	54.6
The second	"	"	33.5	"	35.2
The third	"	"	14.1	"	10.5

Thus in 1861 the third group prevailed, and in 1862 the first and second. But these differences are so well balanced throughout the year, that the mean of the whole year in 1861 and in 1862 is exactly the same, namely, 8.4. Such an identity in the yearly result, even to decimals, is of course not to be expected every year; but it seems to prove, at least, that the yearly mean of electricity is as constant as that of temperature, of relative humidity, and of atmospheric pressure.

The third table, showing the daily periodicity of atmospheric electricity, confirms the daily two maxima and two minima of electricity as an undeniable fact.

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0 1 2 3 4 5 6 7 8 9 10
cm

Fbr 1867

Sagittaria graminea

var. graminea angustifolia
acutifolia (phyllodia)
simplex v. latifolia
platyphylla, the southern
form

I separate from it the
Texas & Mississippi
No. 713
plant with shorter stouter
rounded petiolate pedicels
longer style —
Sub var. recurva

Linn: 1881 also 1862 (Walter)
Drummd. Tex 423
Drummd Herb: 446 Hook
Hale, Louisiana
probably = my S. platyphylla
and not distinct from graminea

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10021

1849 Mrs Schoenfeldt Account

Jan 22 —

March 15 1851

March 16 1852

Jan 1853

1866. 1303.60

65 218 —

64 5 —

12 98

61 1150

1740 10

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S. graminea Mx
var platyphylla

1846

S. Campbelli
n. Ohio
S. canadensis
~~S. Carolina~~
Georgia

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cm
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10022B
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cm
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Germination of Sagittaria graminea St Louis Sept 4 1861

×10

×60

×60

×10

×40

germinating embryo, carpel removed seedcoats burst.

end of radicle with hair fibrillae

×30

seed

embryo

×10

0 1 2 3 4 5 6 7 8 9 10
cm
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10023

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SOUTH-EAST CORNER FOURTH AND MARKET STREETS,

ST. LOUIS.

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Germination of Sagitt. graminea

Sept 10th 1861

St Louis

×10

×10

a

original stemlet

Dying off, new root forming at a.

×415

end of capillary fibres of root

Sept 25

10024

M. W. ALEXANDER,

SOUTH-EAST CORNER FOURTH AND MARKET STREETS,

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Sagittaria graminea

St Louis

July 1863

several flowers examined had all the same arrangt.

male fl. 15 stam. of 6 ples

1 circle alternately with sepals & petals!

2 circle of 6 stam. altern. with 1st, & opp. sepals & petals.

3 circle of 3 stamens. alternately with sepals

13 stam.

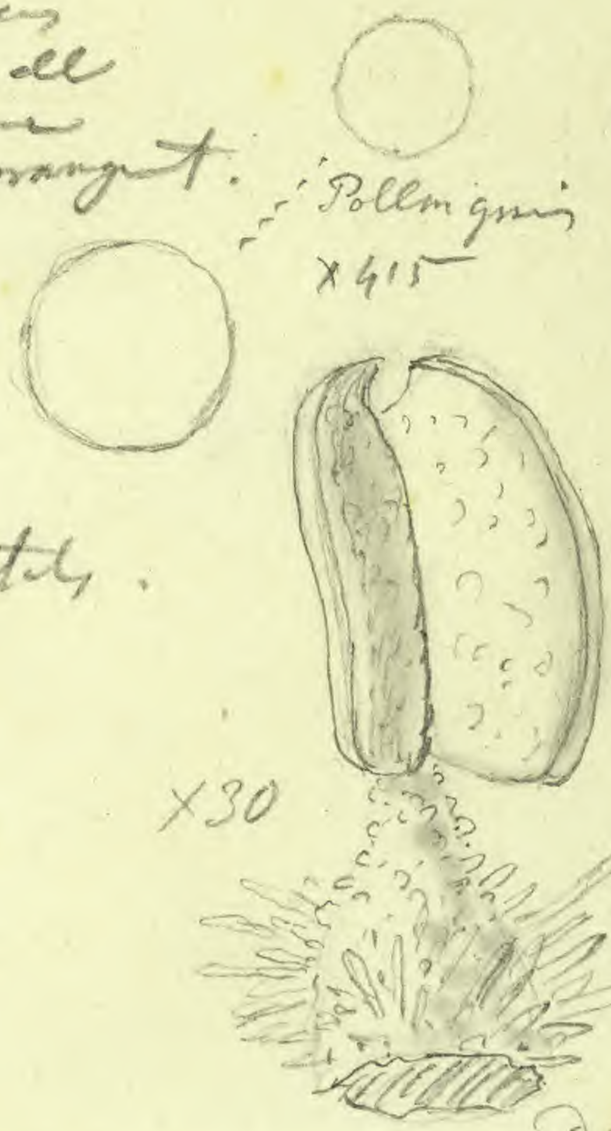
vertcills of raceme

3 flowers alternate

raceme

papillae

one celled hairs



Pollen grain X415

X30

male X415

Stamen

Dorsal view

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ALL THE NEW REMEDIES CONSTANTLY ON HAND
CHEMIST
A

10035

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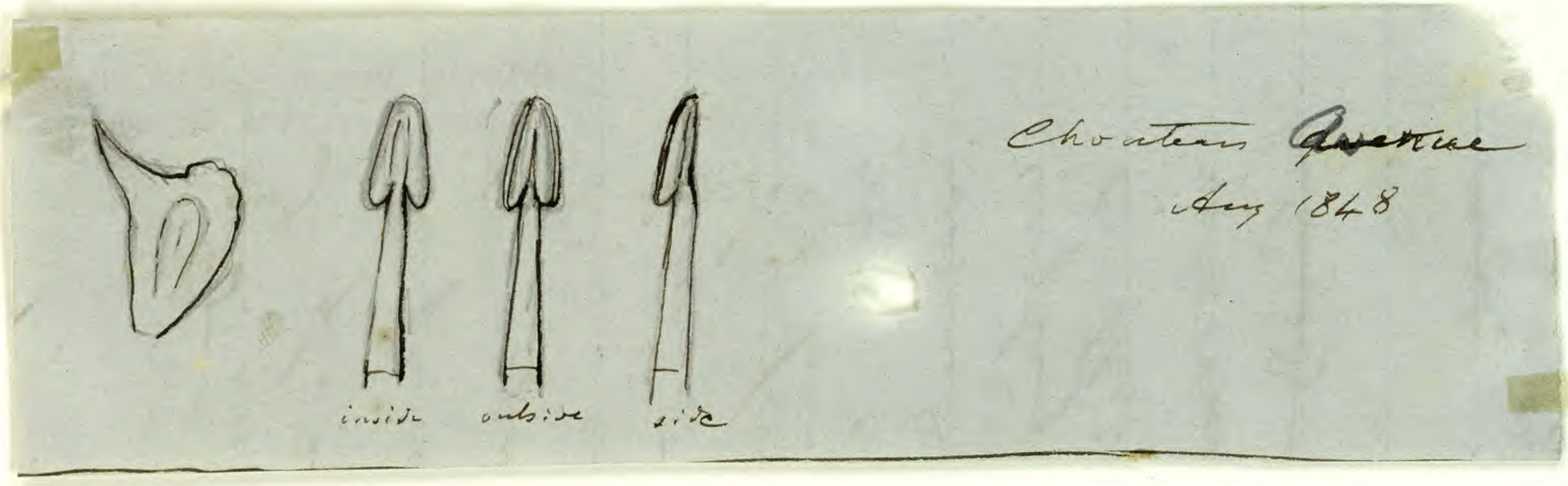

Chouteau Quercus
Aug 1848

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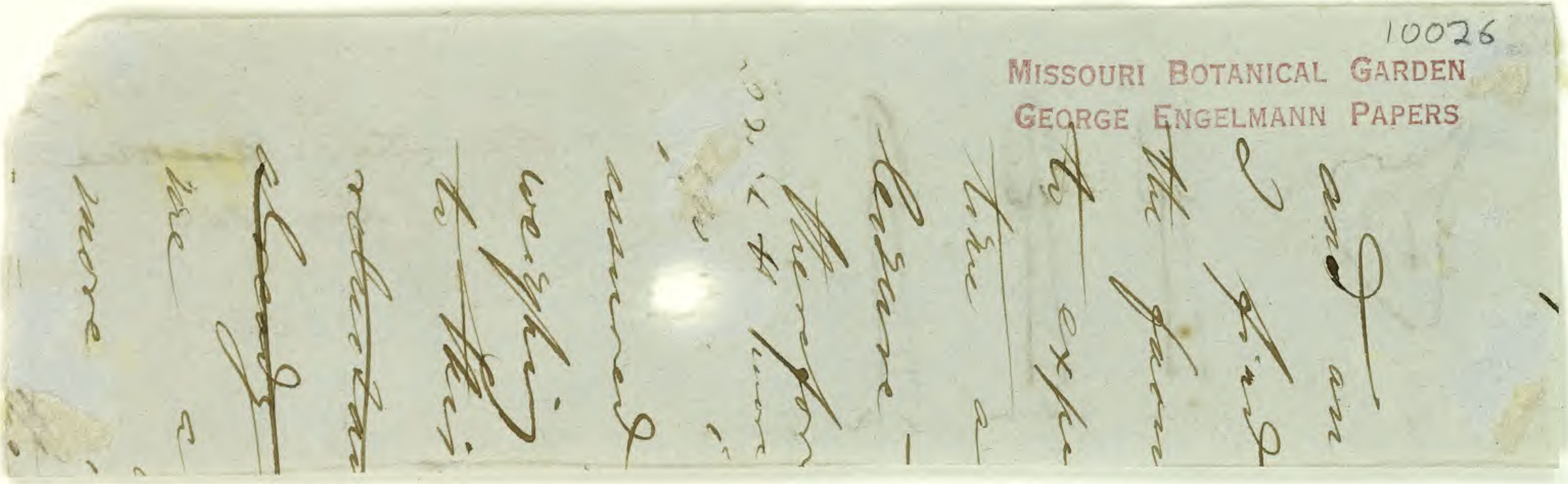

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cm
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Dimensions.—Length, 0.20 of an inch; width, 0.15.

The *Elæacrinus Kirkwoodensis* is nearly allied to *E.* (*Pentremites*) *melo*, from which it is distinguished by its much smaller size and less deeply excavated base. It also occupies a higher geological position.

Occurs in the St. Louis Limestone (Carboniferous) on the Pacific railroad near Kirkwood, St. Louis county, Missouri.

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...of light. They exhibit double refraction quite pl...

The locality of the mineral is near lat. 39° 40′, long. ... 30′ west of Greenwich, west of south of Salt Lake, in Tho... as' range of mountains, on Capt. Simpson's return trail. Circumstances prevented me from obtaining more than a few crystals, which are now deposited in the collection of the Smithsonian Institute; a few others are also in the hands of members of the party. We were travelling at the time by forced night marches with nearly worn out animals, seeking to gain a spring of water in a distant range of mountains. This desert was then entirely unexplored. I have but little doubt that more interesting materials are to be found at the same point.

The mountains of the former Territory of Utah promise a rich yield to the mineralogist. We know already of gold and silver ores in the east, west and south part of that district; of copper and lead ores in the south, and I have discovered the latter also in the centre of it; of specular iron ores and native sulphur in the Rocky Mountains and near Little Salt Lake; of rock salt in the mountains south-east of Utah Lake; of native alum near Salt Lake; of various other salts in the deserts; and of silicates, composing the granites, porphyries, diorites, trachytes, and lavas, nearly over the whole area.

10027

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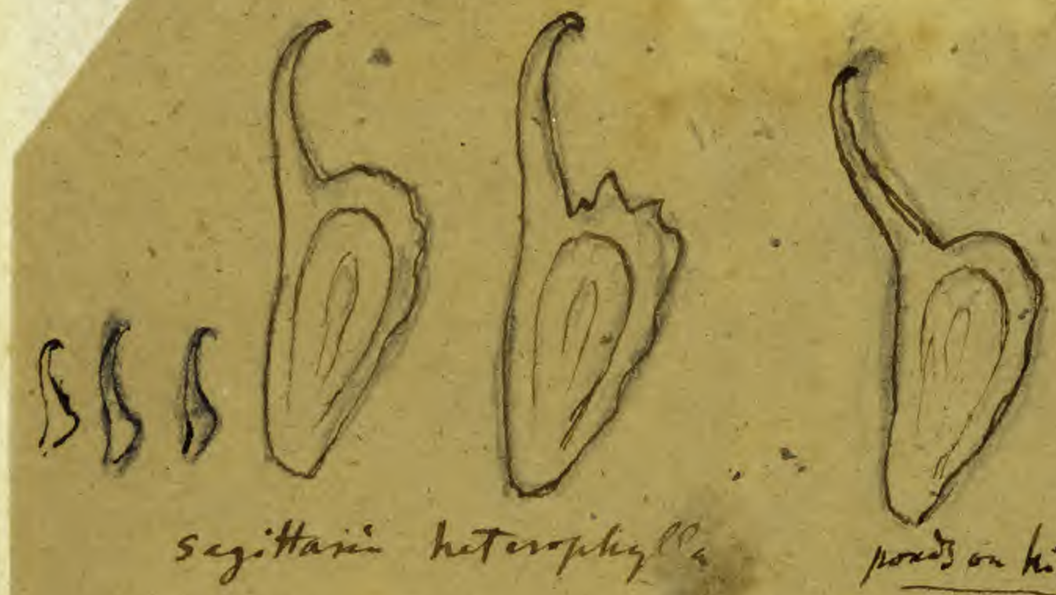
Sept. 1846

Scot of scape



sagittaria heterophylla

ponds on hills

outside

1002841

100283

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" H. Short

" S. heterophylla

Beth Ch. Wolle

is a very slender form

of S. variabilis " male.

1 foot high.

foliis lineari-lanceolatis,

v. longissime ciliatis - Nashville

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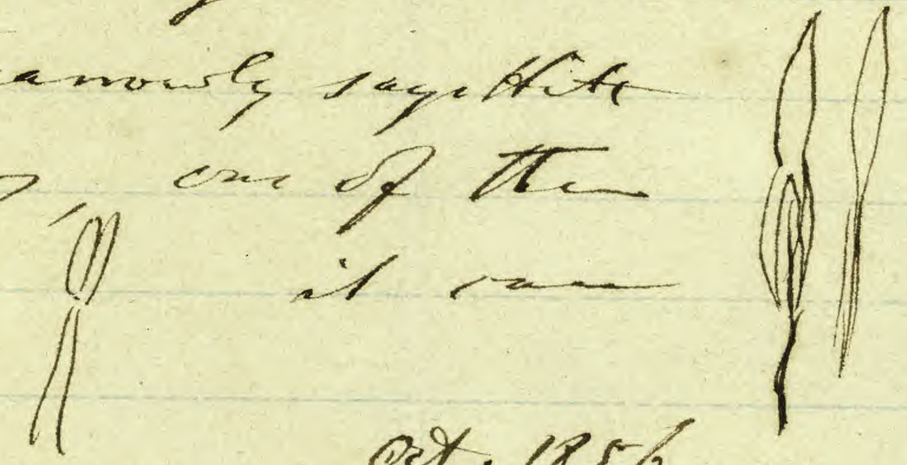
In Herb Gray is a Sagitt. labeled S. heterophylla
from N Jersey, which has narrowly lanceolate linear
leaves, and one or two narrowly sagittate
ones — but has male flowers on all the
with a few pistils — it runs
not like any thing else
S. variabilis



Oct. 1856

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cm
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S. tracky sepals ?. B. Matthes № 278
from Texas

(Can it be a small S. laurifolia ?)

— New Orleans, Drummond, 435 — HH Hook

— Texas Li. Fl. 182

Matthes' plant 278 — HH Hooker " is the larger form of this, venation of leaf = laurifolia; calyx 4 lobed through —

Drummond, Alabama — HH Hook see note, HH Hook

10081

ENNO SANDER & CO,.

PHARMACEUTISTS,

Cor. 4th & Walnut, under Southern Hotel,

Cor. 2d & Walnut, under Barnum's Hotel,

ST. LOUIS, MO.

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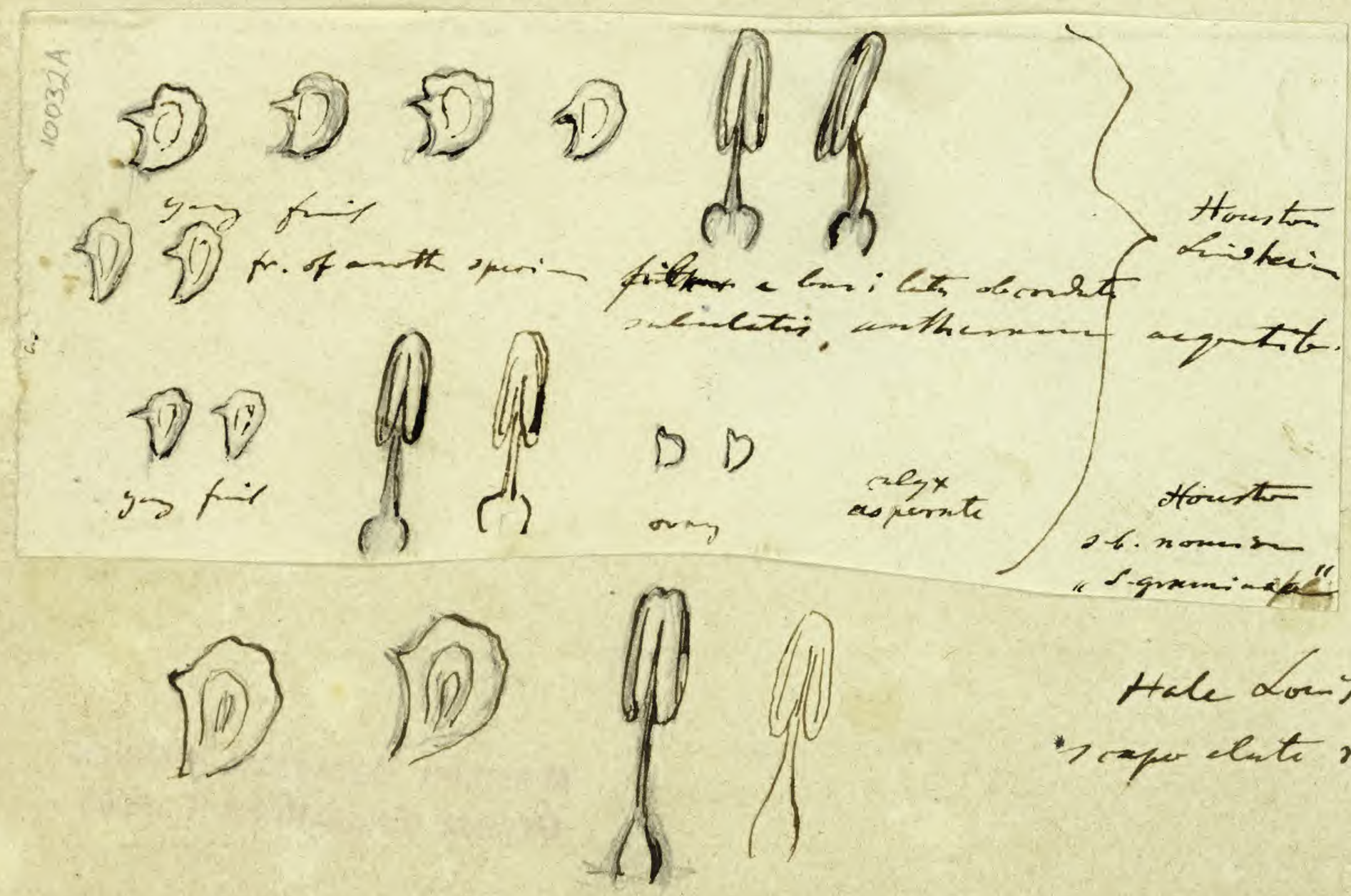
Sagitt. trachyscapula n. sp.

allied to S. graminea



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